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§ 34. **A Simple Dendrometer.**—This instrument is constructed essentially as follows: A tube, *t*, about two inches in diameter, and nearly or quite a foot in length, is supported in a vertical position by two pins, *pp*, near its upper end; and these pins rest upon a ring, *r*, forming a simple gimbal which allows the tube by its own

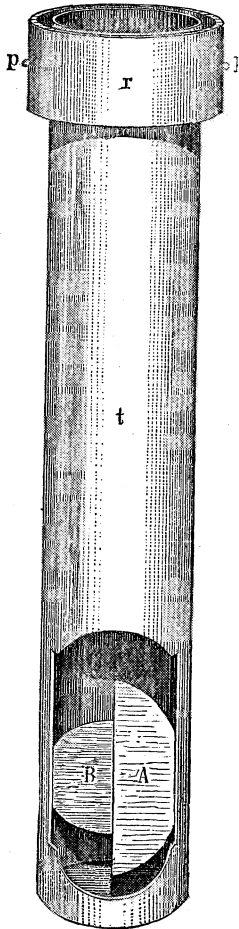


Fig. 1

weight to assume an exactly vertical position. In the lower end of the tube two mirrors, *A* and *B*, are placed side by side, each occupying one half of the section of the diameter of the tube. One of these mirrors (*A*) is inclined at an angle of 45° to the horizon when the tube is in a vertical position, and the other (*B*) has an inclination of $22\frac{1}{2}^\circ$. One side of the tube is properly cut away (as shown in the accompanying figures) so that when it is held vertically the mirror *A* shall transmit to the eye (at *c*) at the top of the tube, the horizontal ray *a*, and the mirror *B*, the ray *b*, which makes an angle of 45° with the horizontal.

The method of using the instrument is simple. By holding the supporting ring, *r*, in the hand in the proper position, the centre of

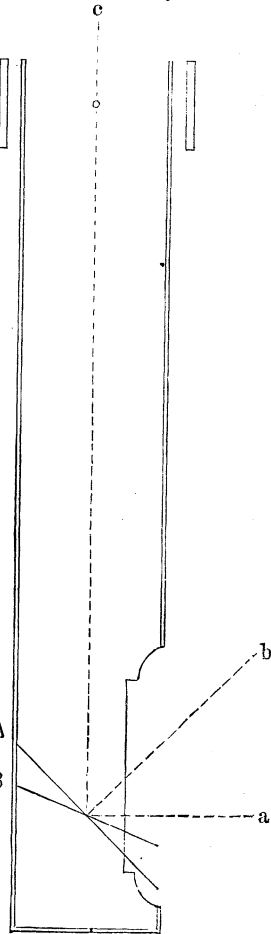


Fig. 2.

the mirror *A* can easily be brought into the same horizontal line as the base of the tree (represented by *a*); then, by moving towards or away from the tree, its apex (represented by *b*) may be brought into view as it is reflected to the eye (*c*) from the mirror *B*. When both apex and base of the tree are seen at the same instant, the distance from the instrument to the tree along the horizontal line *x-a* is equal to the

altitude of the tree.* A simple measurement of this horizontal, by pacing the distance, or by other means, thus gives the height of the tree.

Fig. 1, front view of the instrument. Fig. 2, vertical section of the same, side view.

Ames, Iowa.

C. E. BESSEY.

§ 35. The Herbaria and Botanical Libraries of the United States. V.

HERBARIUM OF THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA.—The Academy of Natural Sciences, of Philadelphia, was founded March 21st, 1812, by a few citizens "interested in the study of the works and laws of the Creator." From the outset, the department of Botany received a due share of attention, and the first contribution to the Academy's Herbarium consisted of a collection of plants made in the environs of Paris and presented by Nicholas S. Parmentier, and still in excellent preservation.

During the years which followed, this little nucleus received constant accretions from the working botanists of the day, and the names of Collins, Elliott, Pursh, Baldwin, Leconte, Conrad, Nuttall, Torrey and Pickering are noted upon many of the early tickets of the Herbarium.

In 1834, the Academy received the bequest of the collections made by Rev. Lewis David Schweinitz during a period of forty years. Most of the North American species were collected by himself, but many came from Dr. Torrey, Major Leconte, Rev. Mr. Dencké, and other correspondents. The European species were contributed by Weldon, Benthams, Brongniart, Schwaegrichen, Steudel and Zeyher. The Siberian plants were furnished by Ledebour, and those of India by Wallich and Steinhauer. Many Chinese species were collected by Mr. James Read; and from the arctic regions were plants collected by the navigator Parry, and received through Sir William Hooker; while from South America were rich collections made by Von Martius, Hufel, Hering and Baldwin. But perhaps the most valuable portion of the bequest consisted of the extensive series of the lower cryptogams, of which Schweinitz had made a special study.

Other valuable contributions followed the bequest of Schweinitz, among which may be specified the Poiteau collection of St. Domingo plants; Chilian plants from Dr. Styles and Dr. Ruschenberger; Nuttall's collections made in his expeditions to Arkansas, Oregon and the Sandwich Islands; Menke's herbarium of 7,000 species of European plants derived from Thunberg, Sprengel, Bernhardt, Treviranus, Mertens, etc.; the Ashmead collection of marine algae; Lesquereux's collection of over 700 species of algae, authenticated by the best algologists of the age, and a large collection of cryptogams from Ravenel.

More recent additions are the herbaria of the late Thomas G. Lea, of Cincinnati, and of Dr. Joseph Carson, late Professor of Materia Medica in the University of Pennsylvania; a large collection from Southern Europe and from India, made by the late John Stuart

* The letter *x*, omitted by the engraver, is supposed to be at the point of intersection of the lines *a*, *b* and *c*.